

CHAPTER 2

DESCRIPTION OF THE CANEY FORK RIVER WATERSHED

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2.1. BACKGROUND. The Caney Fork River Watershed contains low to moderate gradient streams, with productive, nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. There are numerous springs and spring-associated fish fauna.

Streams in the watershed have cut down into the limestone, but the gorge talus slopes are composed of colluvium with huge angular, slabby blocks of sandstone. The area contains numerous waterfalls, cascades, and timberlands. It is the location of several scenic recreation areas.

This Chapter describes the location and characteristics of the Caney Fork River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. Located in Middle Tennessee, the Caney Fork River watershed includes parts of Bledsoe, Cannon, Cumberland, DeKalb, Putnam, Sequatchie, Smith, Van Buren, Warren, White, and Wilson Counties.

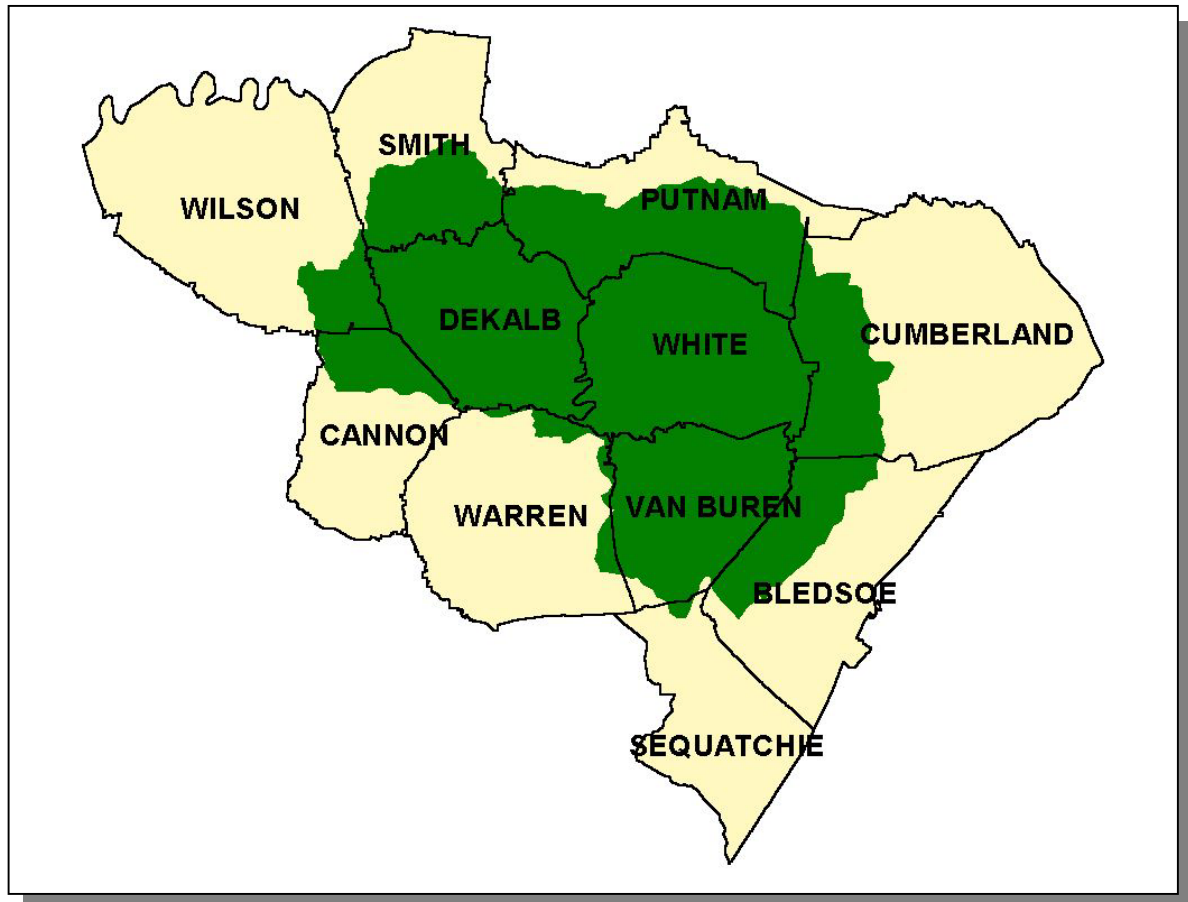


Figure 2-1. General Location of the Caney Fork River Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Wilson	21.4
DeKalb	18.7
Van Buren	15.4
Putnam	14.9
Cumberland	8.8
Bledsoe	6.7
Smith	6.7
Cannon	3.9
Warren	2.0
White	1.4
Sequatchie	0.2

Table 2-1. The Caney Fork River Watershed Includes Parts of Eleven Middle Tennessee Counties.

2.2.B. Population Density Centers. One interstate and six state highways serve the major communities in the Caney Fork River Watershed.

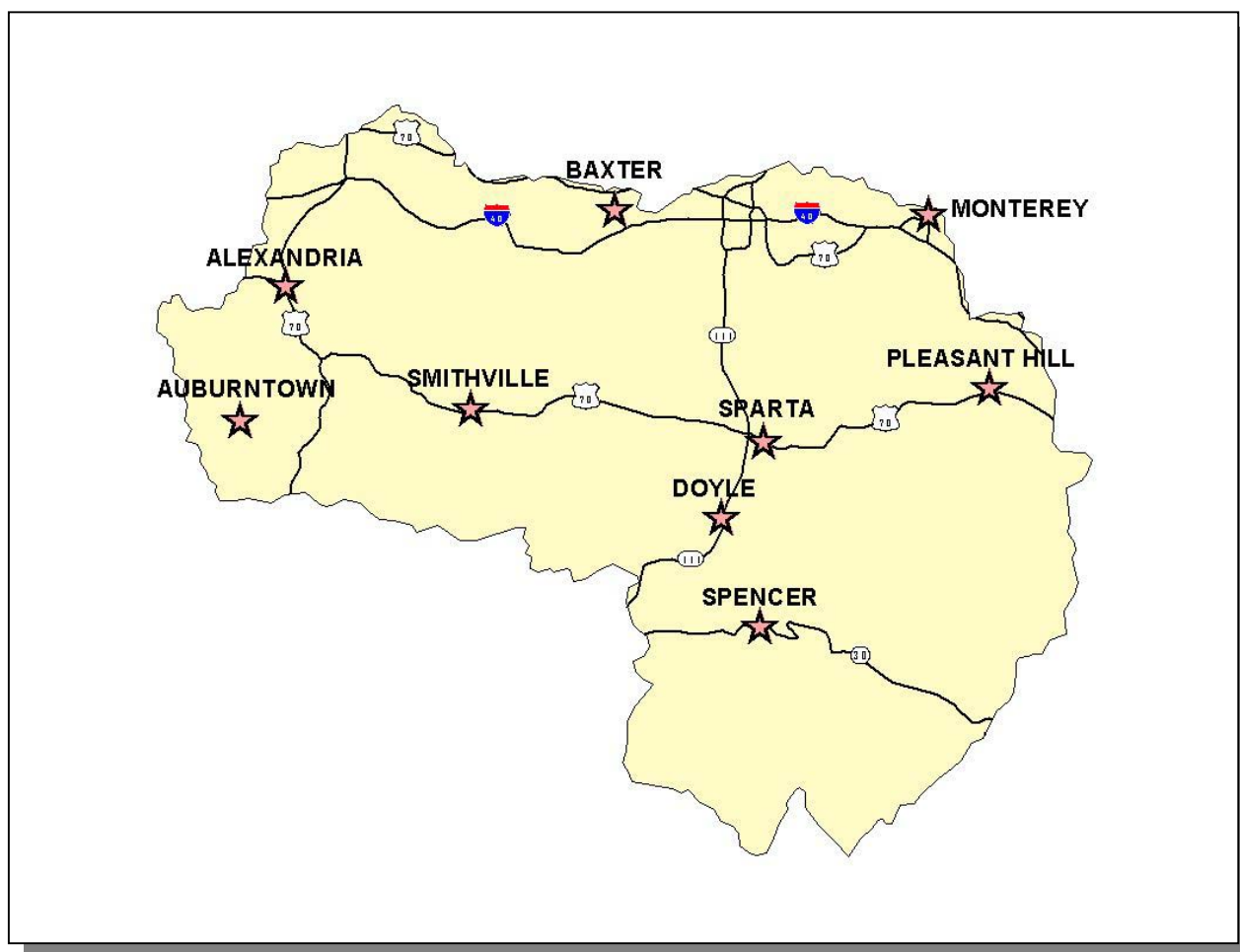


Figure 2-2. Municipalities and Roads in the Caney Fork River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Sparta*	4,990	White
Smithville*	4,110	DeKalb
Monterey	2,872	Putnam
Baxter	1,434	Putnam
Spencer	1,171	Van Buren
Alexandria	744	DeKalb
Pleasant Hill	575	Cumberland
Doyle	374	White
Auburntown	259	Cannon

Table 2-2. Municipalities in the Caney Fork River Watershed. Population based on 1996 census (Tennessee Blue Book). Asterisk (*) indicates county seat.

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Caney Fork River Watershed, designated 05130108 by the USGS, is approximately 1,771 square miles and empties to the Cumberland River.

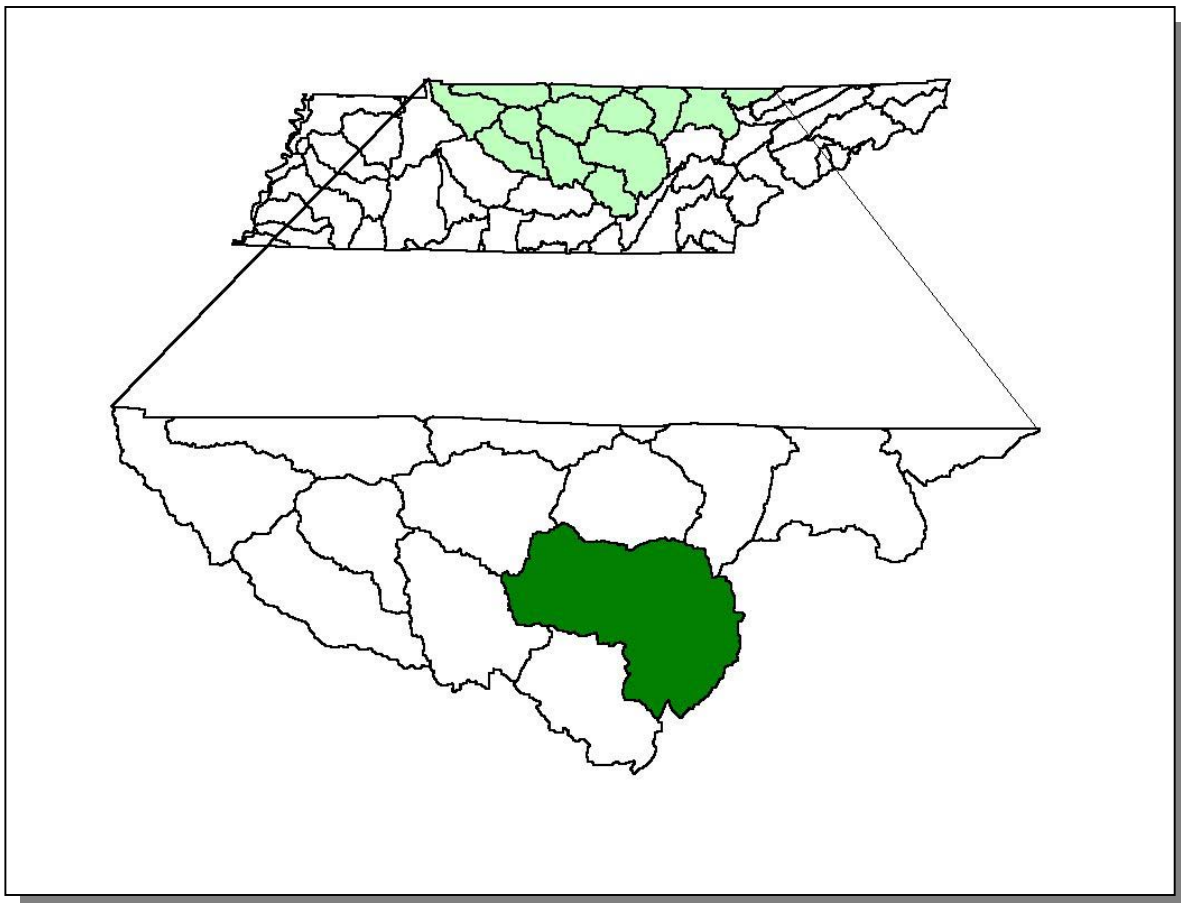


Figure 2-3. The Caney Fork River Watershed is Part of the Cumberland River Basin.

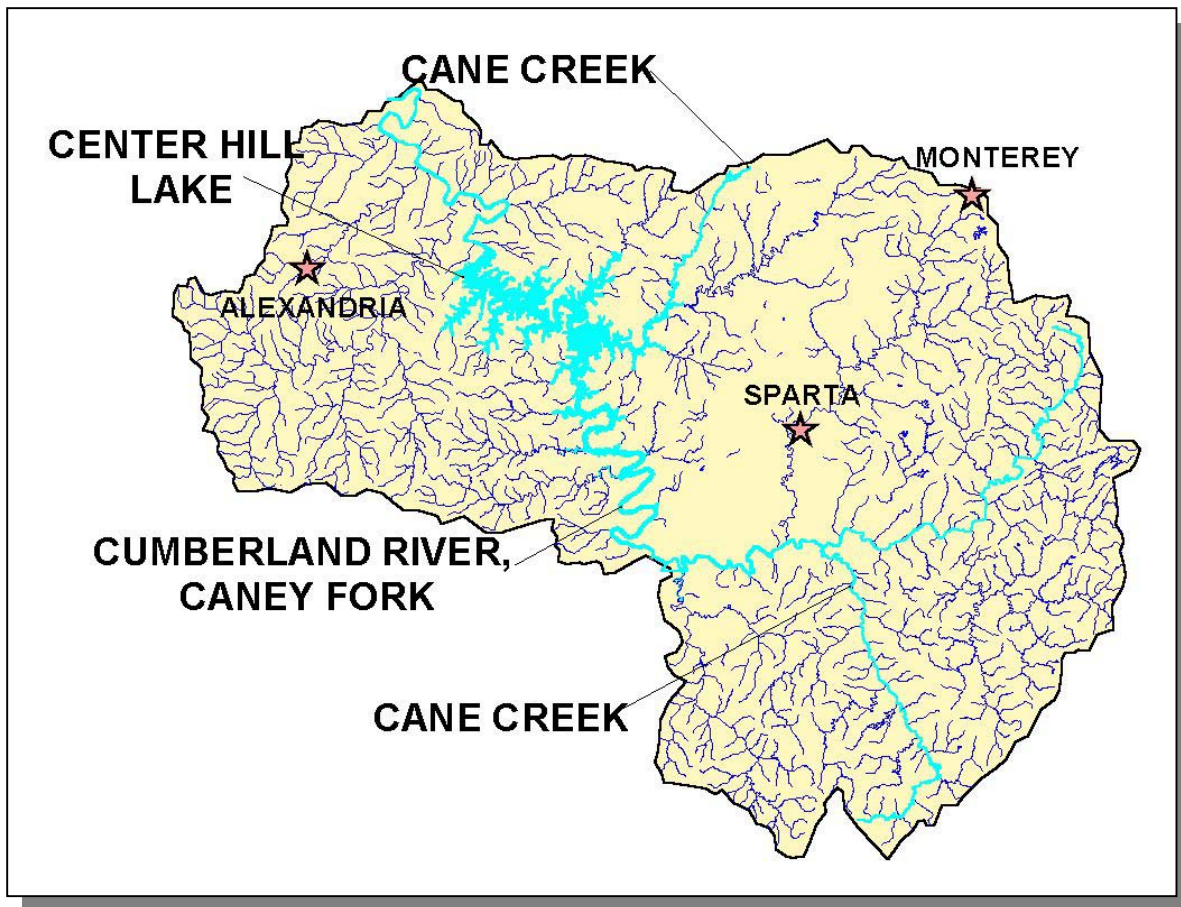


Figure 2-4. Hydrology in the Caney Fork River Watershed. There are 2,038 stream miles and 25,817 lake acres recorded in River Reach File 3 in the Caney Fork River Watershed. Location of the Caney Fork River, Cane Creek, Center Hill Lake and the cities of Alexandria, Monterey, and Sparta are shown for reference.

2.3.B. Dams. There are 48 dams inventoried by TDEC Division of Water Supply in the Caney Fork River Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

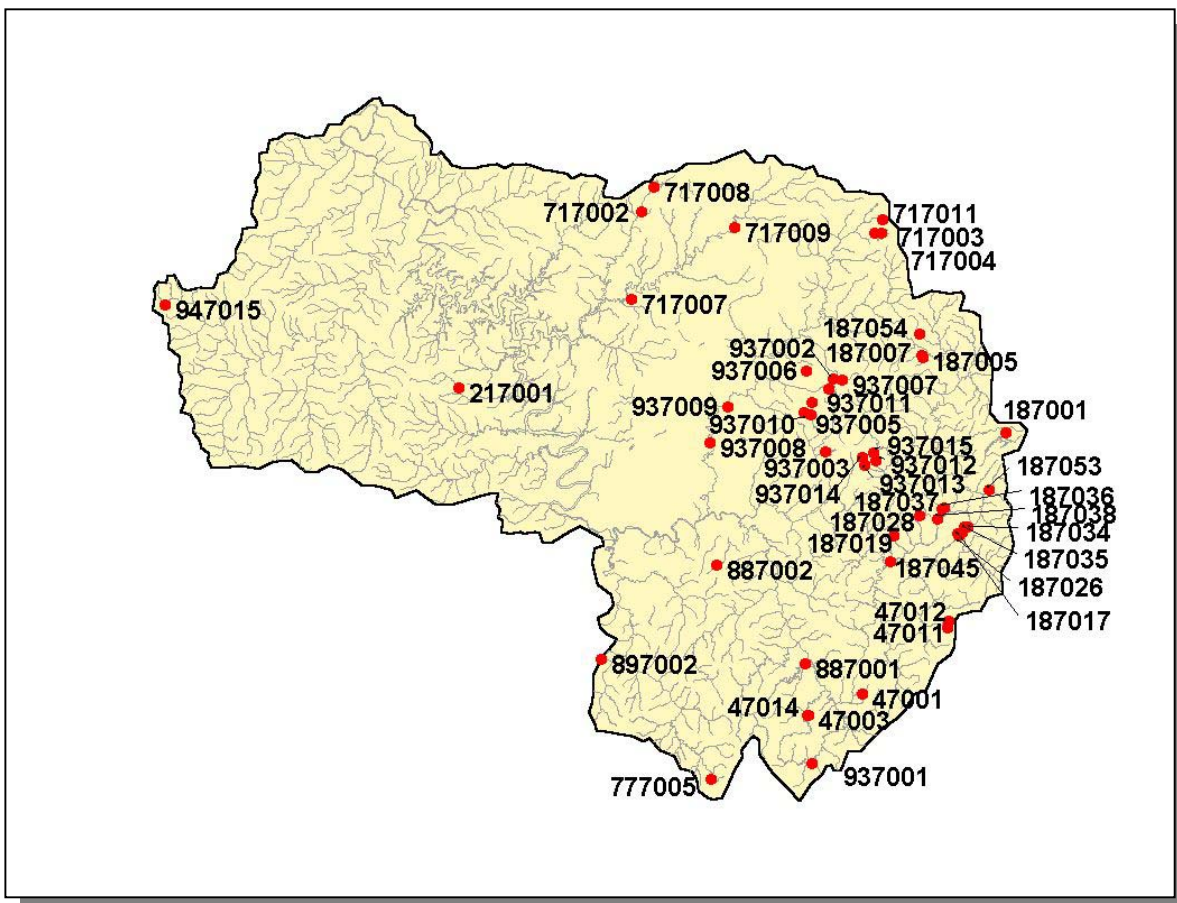


Figure 2-5. Location of Inventoried Dams in the Caney Fork River Watershed. More information is provided in Caney Fork-Appendix II and on the TDEC homepage at: <http://gwidc.gwi.memphis.edu/website/dams/viewer.htm>

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

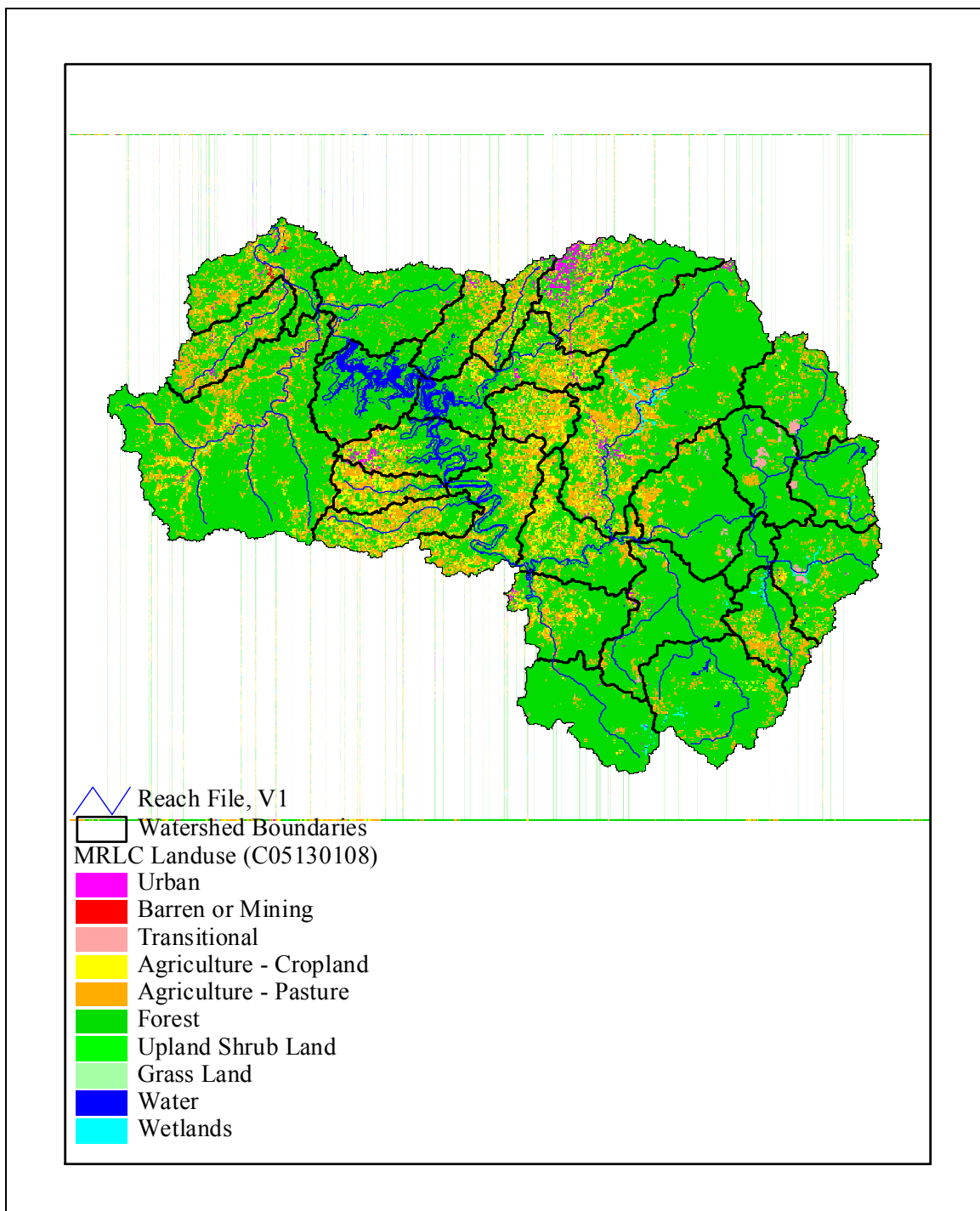


Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

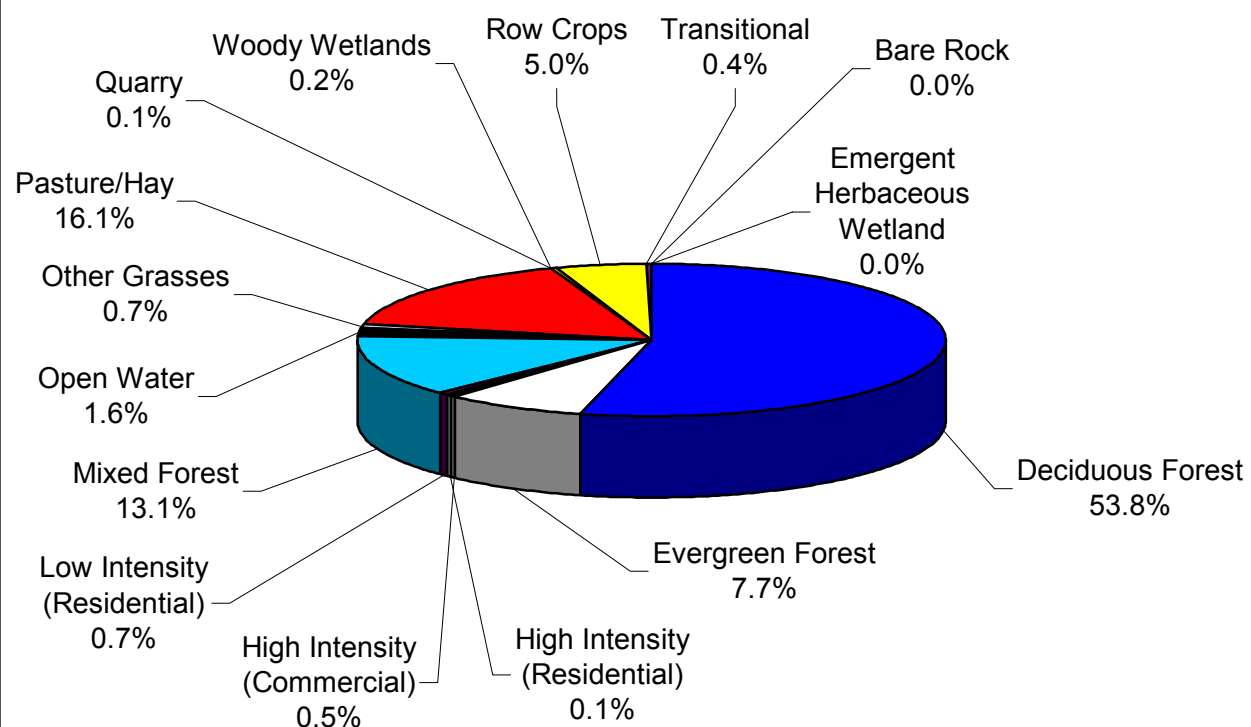


Figure 2-7. Land Use Distribution in the Caney Fork River Watershed. More information is provided in Caney Fork-Appendix II.

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are defined as relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies include the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Caney Fork River Watershed lies within 2 Level III ecoregions (Interior Plateau and Southwestern Appalachians) and contains 4 Level IV subecoregions (Griffen, Omernik, Azavedo):

- The Cumberland Plateau's (68a) tablelands and open low mountains are about 1000 feet higher than to the west, and receive slightly more precipitation with cooler annual temperatures than the surrounding lower-elevation ecoregions. The plateau surface is less dissected with lower relief compared to the Cumberland Mountains or the Plateau Escarpment (68c). Elevations are generally 1200-2000 feet, with the Crab Orchard Mountains reaching over 3000 feet. Pennsylvania-age conglomerate, sandstone, siltstone, and shale is covered by mostly well-drained, acidic soils of low fertility. The region is forested, with some agriculture and coal mining activities.
- The Plateau Escarpment (68c) is characterized by steep, forested slopes and high velocity, high gradient streams. Local relief is often 1000 feet or more. The geologic strata include Mississippian-age limestone, sandstone, shale, and siltstone, and Pennsylvania-age shale, siltstone, sandstone, and conglomerate. Streams have cut down into the limestone, but the gorge talus slopes are composed of colluvium with huge angular, slabby blocks of sandstone. Vegetation community types in the ravines and gorges include mixed oak and chestnut oak on the upper slopes, more mesic forests on the middle and lower slopes (beech-tulip poplar, sugar maple-basswood-ash-buckeye), with hemlock along rocky streamsides and river birch along floodplain terraces.
- The Eastern Highland Rim (71g) has level terrain, with landforms characterized as tablelands of moderate relief and irregular plains. Mississippian-age limestone, chert, shale, and dolomite predominate, and karst terrain sinkholes and depressions are especially noticable between Sparta and McMinnville. Numerous springs and spring-associated fish fauna also typify the region. Natural vegetation for the region is transitional between the oak-hickory type to the west and the mixed mesophytic forests of the Appalachian ecoregions (68, 69) to the east. Bottomland hardwood forest has been inundated by several large impoundments. Barrens and former prairie areas are now mostly oak thickets or pasture and cropland.
- Outer Nashville Basin (71h) is a more heterogenous region than the Inner Nashville Basin, with more rolling and hilly topography and slightly higher

elevations. The region encompasses most all of the outer areas of the generally non-cherty Ordovician limestone bedrock. The higher hills and knobs are capped by the more cherty Mississippian-age formations, and some Devonian-age Chattanooga shale, remnants of the Highland Rim. The region's limestone rocks and soils are high in phosphorus, and commercial phosphate is mined. Deciduous forests with pasture and cropland are the dominant land covers. Streams are low to moderate gradient, with productive nutrient-rich waters, resulting in algae, rooted vegetation, and occasionally high densities of fish. The Nashville Basin as a whole has a distinctive fish fauna, notable for fish that avoid the region, as well as those that are present.

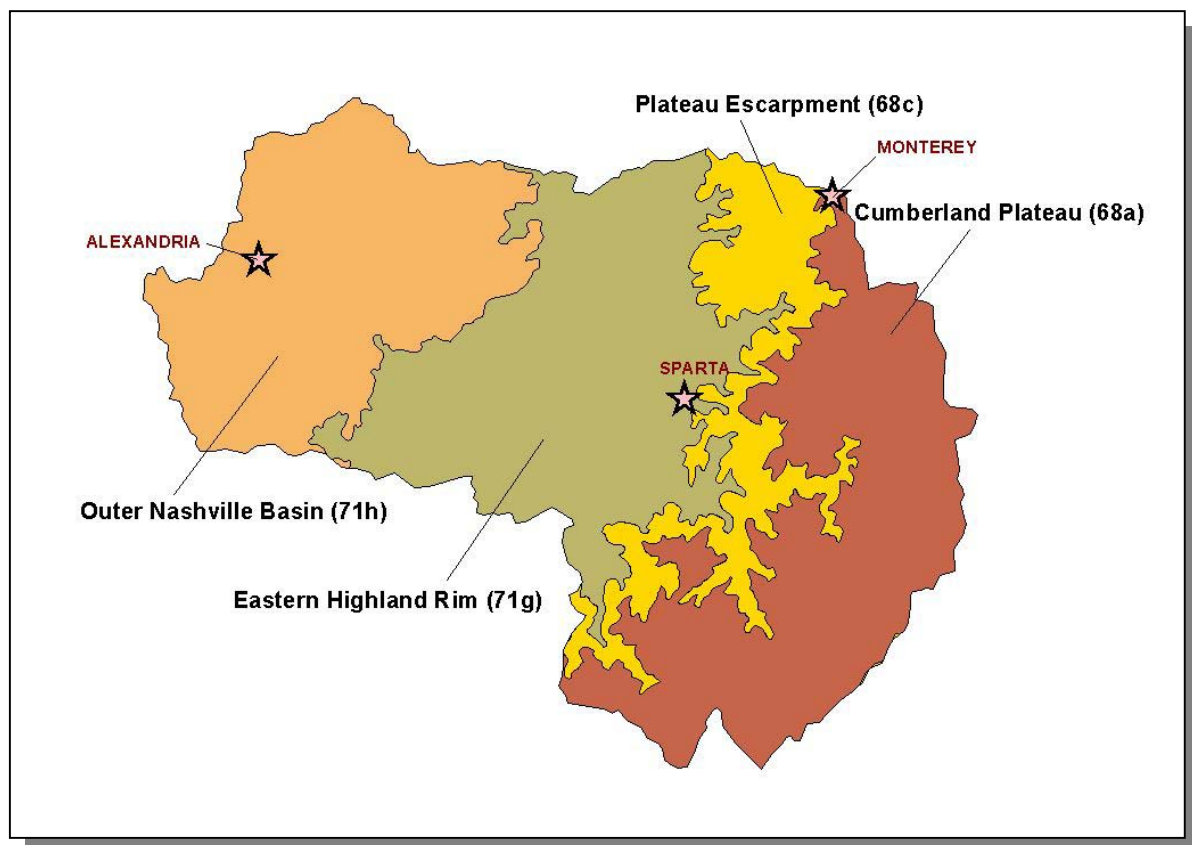


Figure 2-8. Level IV Ecoregions in the Caney Fork River Watershed. Locations of Alexandria, Monterey, and Sparta are shown for reference.

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

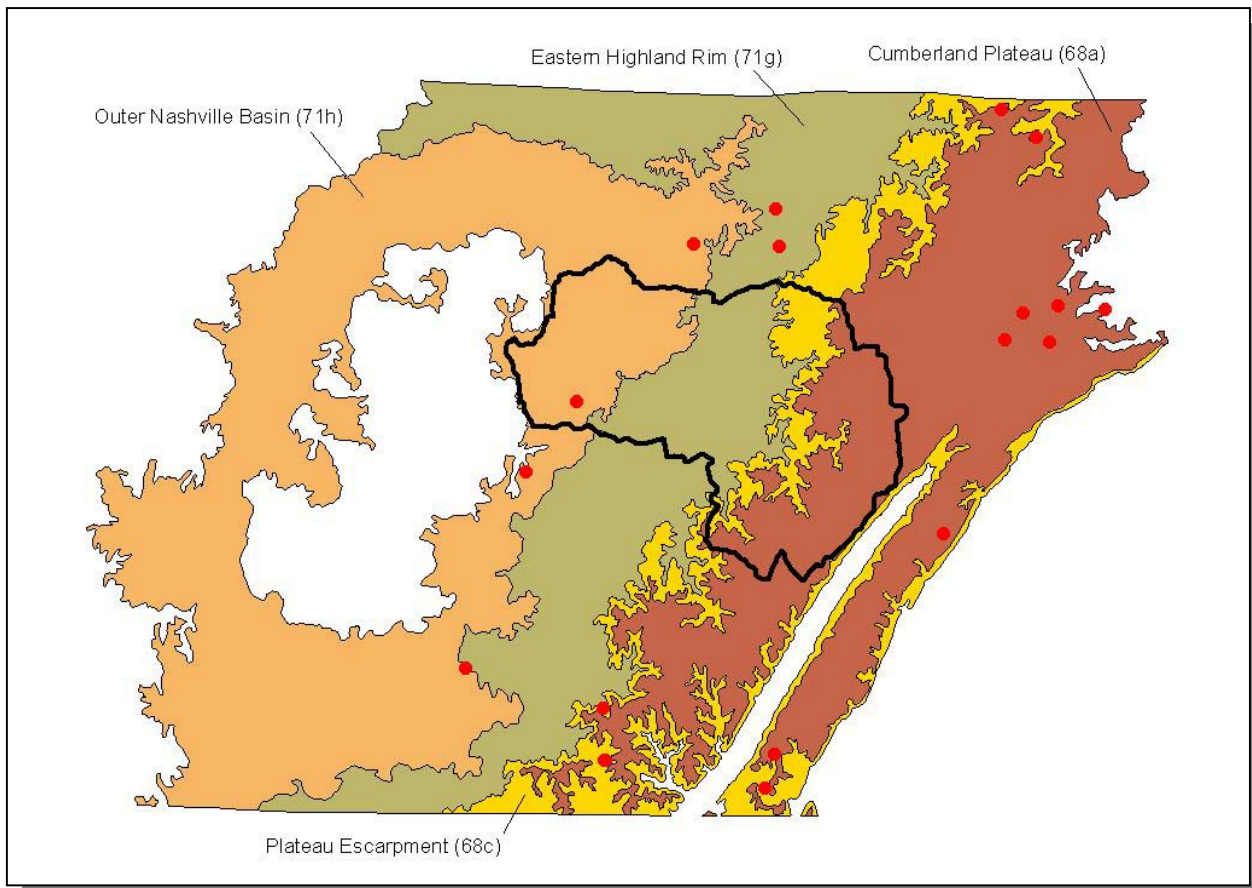


Figure 2-9. Ecoregion Monitoring Sites in Level IV Ecoregions 68a, 68c, 71g, and 71h. The Caney Fork River Watershed is shown for reference. More information is provided in Caney Fork-Appendix II.

2.6. NATURAL RESOURCES.

2.6.A. Designated State Natural Areas. The Natural Areas Program was established in 1971 with the passage of the Natural Areas Preservation Act. The Caney Fork River Watershed has five Designated State Natural Areas:

Bone Cave State Natural Area contains a cave of significant archaeological, historical, and scenic value.

Burgess Falls State Natural Area Sanctuary, which offers state protection to all areas, features, plants, animals, and artifacts as well as rugged hiking trails.

Fall Creek Falls State Natural Area contains oak and hickory forest, tulip poplar, hemlock forest, mountain laurel, and rhododendron.

Short Mountain State Natural Area is a remnant of the Cumberland Plateau, with scenic rock formations and a thriving flora population.

Virgin Falls Pocket Wilderness is a 317-acre tract containing a 5 mile hiking trail that terminates at scenic Virgin Falls

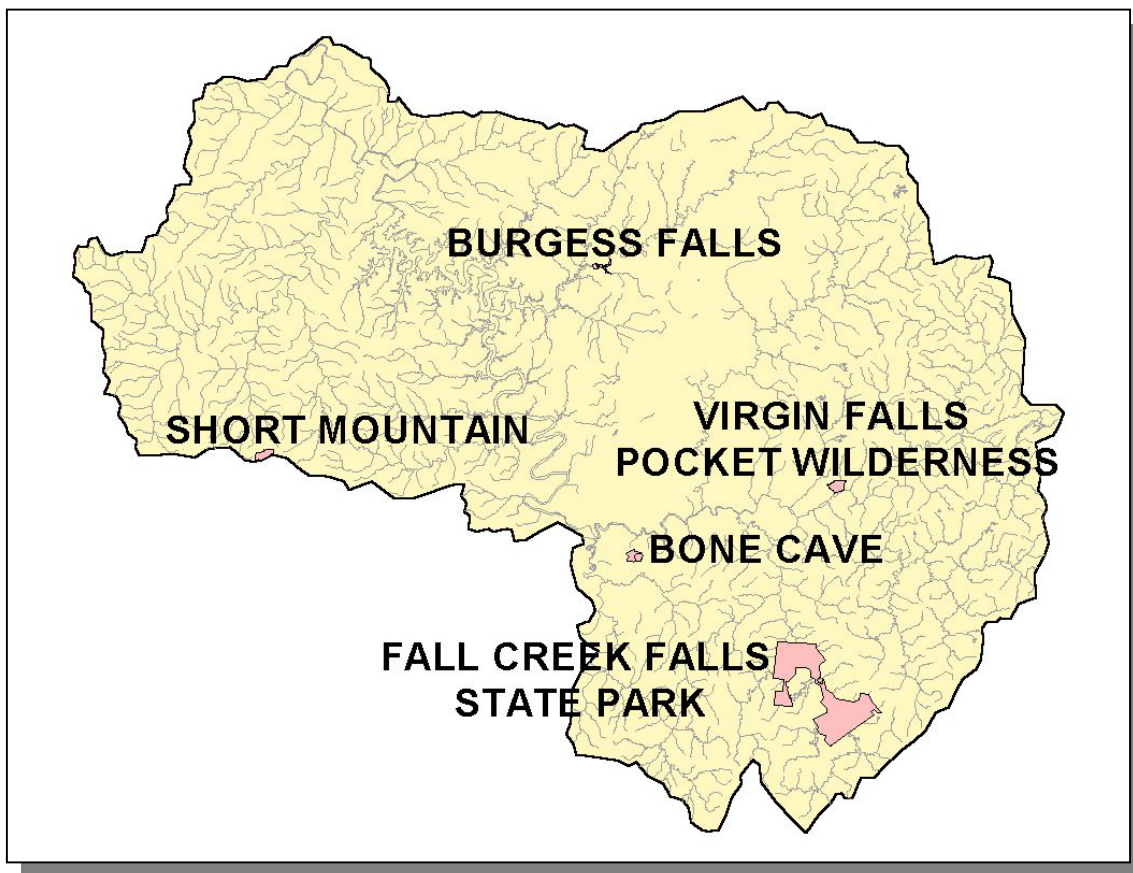


Figure 2-10. There are Five Designated State Natural Areas in the Caney Fork River Watershed.

2.6.B. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Crustaceans	1
Insects	0
Mussels	9
Snails	1
Amphibians	0
Birds	3
Fish	4
Mammals	5
Reptiles	0
Plants	36
Total	59

Table 2-3. There are 59 Rare Plant and Animal Species in the Caney Fork River Watershed.

In the Caney Fork River Watershed, there are four rare fish species, seven rare mussel species, one rare snail species, and one rare crustacean species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Erimystax cahni	Slender chub	LT	T
Etheostoma sp d	Jewel darter (doration)	LE	E
Notropis rupestris	Bedrock shiner		D
Etheostoma etnieri	Cherry darter		
Cyprogenia irrorate	Eastern fanshell pearlymussel	LE	E
Dromus dromas	Dromedary pearlymussel	LE	E
Epioblasma brevidens	Cumberlandian combshell	LE	E
Pegias fabula	Little-wing pearlymussel	LE	E
Plethobasus cicatricosus	White wartyback	LE	E
Pleurobema gibberum	Cumberland pigtoe	LE	E
Villosa trabalis	Cumberland bean	LE	E
Lithasia geniculata	Ornate rocksnail	LE	E
Cambarus pristinus	A crayfish	MC	E

Table 2-4. Rare Aquatic Species in the Caney Fork River Watershed. Federal Status: LE, Listed Endangered by the U.S. Fish and Wildlife Service, LT, Listed Threatened by the U.S. Fish and Wildlife Service, MC, Management Concern for the U.S. Fish and Wildlife Service. State Status: E, Listed Endangered by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency, T, Listed Threatened by the Tennessee Wildlife Resources Agency. More information may be found at <http://www.state.tn.us/environment/nh/tnanimal.html>

2.6.C. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

<http://www.state.tn.us/environment/epo/wetlands/strategy.zip>.

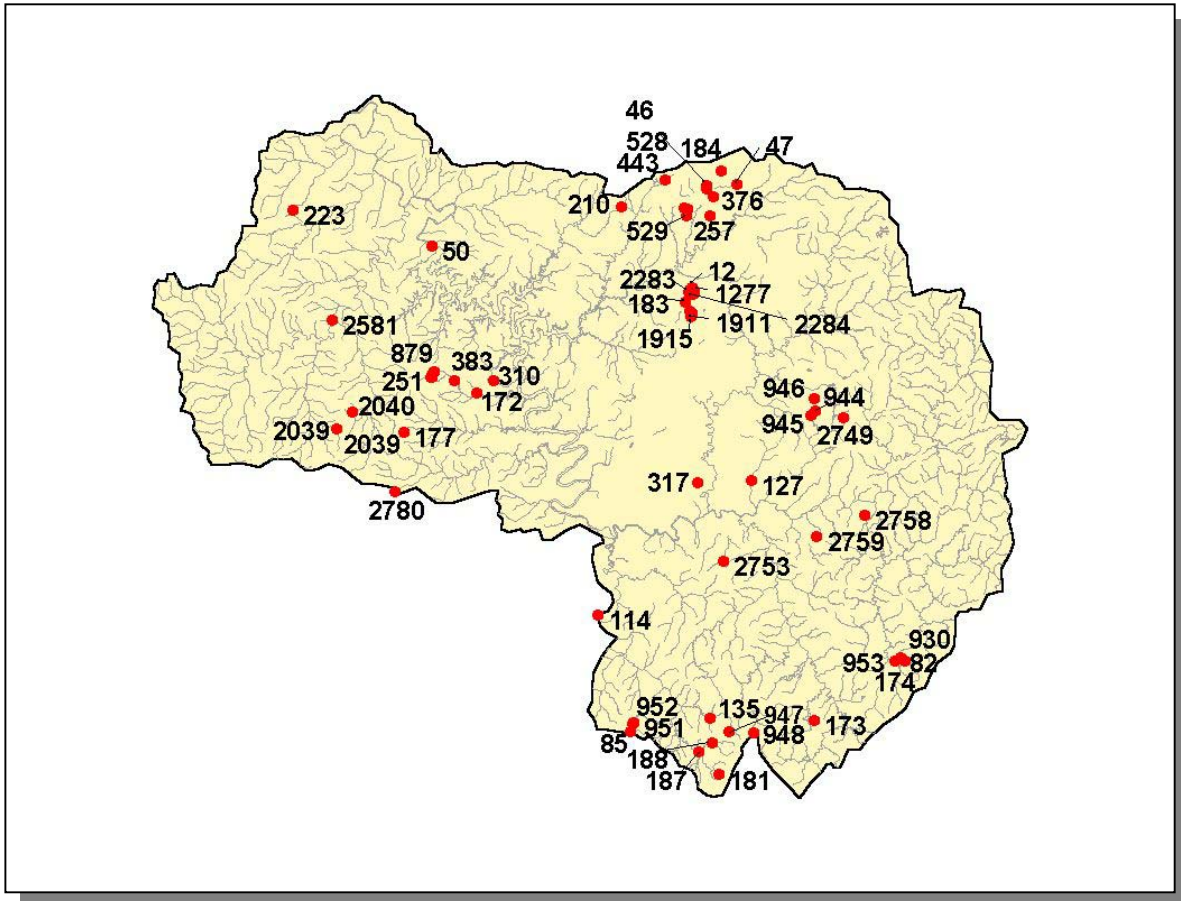


Figure 2-11. Location of Wetland Sites in TDEC Division of Natural Heritage Database in Caney Fork River Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands. There may be additional wetland sites in the watershed. More information is provided in Caney Fork-Appendix II.

2.7. CULTURAL RESOURCES.

2.7.A. Nationwide Rivers Inventory. The Nationwide Rivers Inventory, required under the Federal Wild and Scenic Rivers Act of 1968, is a listing of free-flowing rivers that are believed to possess one or more outstanding natural or cultural values. Exceptional scenery, fishing or boating, unusual geologic formations, rare plant and animal life, cultural or historic artifacts that are judged to be of more than local or regional significance are the values that qualify a river segment for listing. The Tennessee Department of Environment and Conservation and the Rivers and Trails Conservation Assistance branch of the National Park Service jointly compile the Nationwide Rivers Inventory from time to time (most recently in 1997). Under a 1980 directive from the President's Council on Environmental Quality, all Federal agencies must seek to avoid or mitigate actions that would have an adverse effect on Nationwide Rivers Inventory segments.

The most recent version of the Nationwide Rivers Inventory lists portions of eight streams in the Caney Fork River Watershed:

Bee Creek. Small, twisting, plunging stream with small to medium drops; penetrates Bledsoe State Forest; boulders, ledges, and bluffs; dense forested corridor that provides for wildlife habitat.

Cane Creek of Caney Fork. Flows through Fall Creek Falls State Forest and Park; narrowly incised with rugged, rocky landscape; dense laurel thickets; good whitewater.

Cumberland River, Caney Fork. Ledges, numerous drops, huge boulders, sheer cliffs, and limestone bluffs; rugged gorge area; excellent water quality; numerous springs; abundance of wildlife.

Falling Water River. Clear, scenic stream: Burgess Falls.

Pine Creek of Caney Fork. Small, scenic fishing stream.

Rocky River. Scenic stream; Karst topography; Norton Springs.

Sink Creek. Scenic floating stream.

Smith Fork. Scenic stream flowing over limestone bed with riffles and deep pools; high limestone bluffs and beautiful valley of farms and woodlands line corridor.

RIVER	SCENIC	RECREATION	GEOLOGIC	FISH	WILDLIFE
Bee Creek	X	X	X	X	X
Cane Creek	X	X	X	X	X
Cumberland River, Caney Fork	X	X	X	X	X
Falling Water River	X	X	X	X	X
Pine Creek		X		X	X
Rocky River	X	X	X	X	X
Sink Creek	X	X		X	X
Smith Fork	X	X	X	X	X

Table 2-5. Attributes of Streams Listed in the Nationwide Rivers Inventory.

Additional information may be found online at <http://www.ncrc.nps.gov/rtca/nri/tn.htm>

2.7.B. Greenways. South Carter Street Riverfront Park in Sparta has completed a paved greenway trail along the Calfkiller River.

2.7.C. Interpretive Areas. Some sites representative of the cultural heritage are under state or federal protection:

- Bridgestone/Firestone Conservation Area consists of 4000 donated acres in Scott's Gulf with plans for a hikers' entrance to the Caney Fork River.
- Burgess Falls State Park contains a streamside nature trail that winds through lush woodlands descending below scenic limestone.
- Edgar Evins State Rustic Park, 6000 acres on Center Hill Reservoir with fishing, boating, and scenic hiking trails.
- Fall Creek Falls State Park, 20,000 acres that include the highest waterfall in the U.S. east of the Rockies.
- Sparta Rock House, a state-owned historic site that was once operated as a stage coach inn frequented by Andrew Jackson on trips from Nashville to Washington.
- Virgin Falls, formed by an underground stream and a 110-foot drop off. Overlooks, streams, caving, and a backpacking area as well as an 8 mile hiking trail.

In addition, there are many local interpretive areas, most notably Smithville's Greenbrook Community Park and Standing Stone Monument in Monterey City Park.

2.7.D. Wildlife Management Area. The Tennessee Wildlife Resources Agency manages the Pea Ridge Wildlife Management Area.



Figure 2-12. TWRA Manages Pea Ridge Wildlife Management Area in the Caney Fork River Watershed. Locations of Alexandria, Monterey, and Sparta are shown for reference.

2.8. TENNESSEE RIVERS ASSESSMENT PROJECT. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

<http://www.state.tn.us/environment/wpc/publications/riv/>

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Beaverdam Creek	4			Little Cane Creek	2		
Bee Creek	1,3			Little Laurel Creek	3		
Big Indian Creek	1	2	1	Little Lost Creek	2		
Big Lost Creek	3			Long Branch Creek	3		
Blue Springs Creek	2			Lost Creek	3		
Bridge Creek	2			Maxwell Branch Mine Lick Creek	2		
Buck Creek	2			Meadow Branch Creek	3		
Calfkiller River	2	2	1,2	Meadow Creek	2		
Cane Creek	1,2	2	2	Milsea Branch Clifty Creek	3		
Caney Fork River	1,2,3	1,2	1,2	Mine Lick Creek	2		
Cherry Creek	3		3	Mount Pleasant Branch Dry Fork Creek	3		
Clear Fork Creek	2		3	Pine Creek			
Clifty Creek	1			Piney Creek	1		
Connell Creek	2			Post Oak Creek	3		3
Dry Creek	1	2	2	Rocky River	2	3	1,2
Dry Fork Creek	1			Samples Fork Creek	1		
Fall Creek	3		2	Sandy Branch Rocky River			
Falling Water River		2	2	Sanders Fork Creek	2		
Glade Creek	2			Sink Creek	1		
Helton Creek	2		2	Smith Fork Creek	2	2	2
Hickman Creek	3			Snow Creek			3
Hickory Valley Branch Caney Fork River	3			Taylor Creek	3		
Hughes Creek	3			West Fork Creek	3		
Hurricane Creek	2			Wilkerson Creek	3		
Laurel Branch Creek	3						
Laurel Creek	2		2				

Table 2-6. Stream Scoring from the Tennessee Rivers Assessment Project.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed